Polarisation, Populism and Hyperinflation*[s]*: Some Evidence from Latin America

Dr. Manoel Bittencourt
School of Economics, UCT

Stellenbosch, March 2009

1 Introduction and Motivation

- *Some* Latin American countries presented periods of high economic and political *polarisation*, or periods of high economic inequality combined with political dictatorships, in the 1970s and 1980s,

- which were *followed* by long episodes of high inflation and even bursts of *hyperinflation* in the 1980s and 1990s, e.g. Brazil, Argentina, Peru and Bolivia, to mention a few.

- More specifically, these hyperinflationary episodes occurred right after re-democratisation, or a reduction in polarisation, took place in those countries,

- and macroeconomic stabilisation came only after a long *delay*, i.e. roughly ten years after the implementation of more democratic institutions.

- Hence, this paper uses data from Brazil, Argentina and Peru from 1970 to 2003, and the sample captures periods of high polarisation, re-democratisation, high inflation, hyperinflation, and then macroeconomic stabilisation. We therefore test for the *populist view* of state capture in Latin America.

- The empirical results suggest that polarisation presented a negative and significant impact on inflation, which indicates that the reduction in polarisation seen in the 1980s was, in fact, *detrimental* to macroeconomic stability.

- Therefore, the evidence allows us to speculate that the recently-elected governments in those countries pursued populist, or the so-called *[re]*distributive, policies that led to poor macroeconomic performance.

- All in all, the populist view hypothesis of state capture is *accepted* by the data.
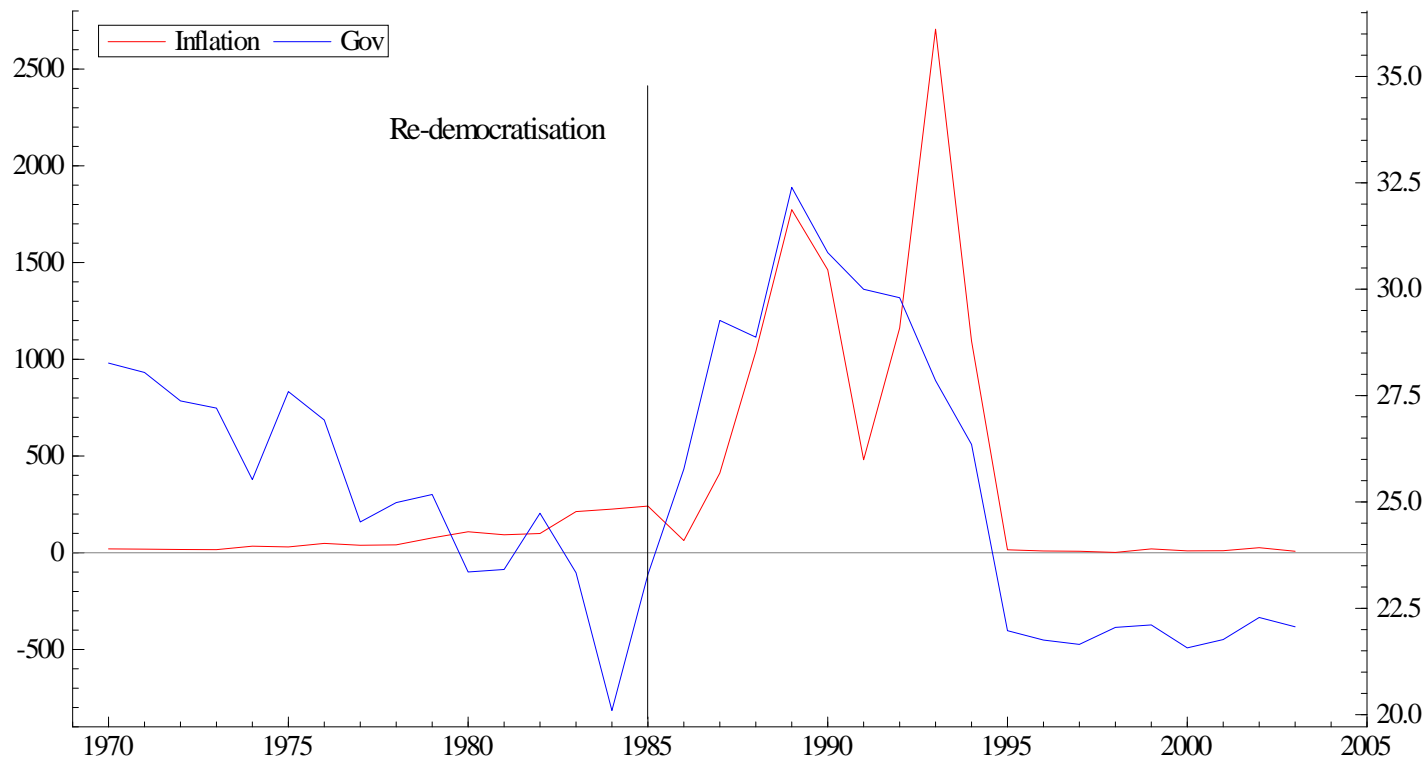
Figure 1: Inflation and Government, Brazil 1970-2003. Source: FGV, IPEA and PWT 6.2. $INFLATION$ is the inflation rates and GOV the share of government of the GDP.
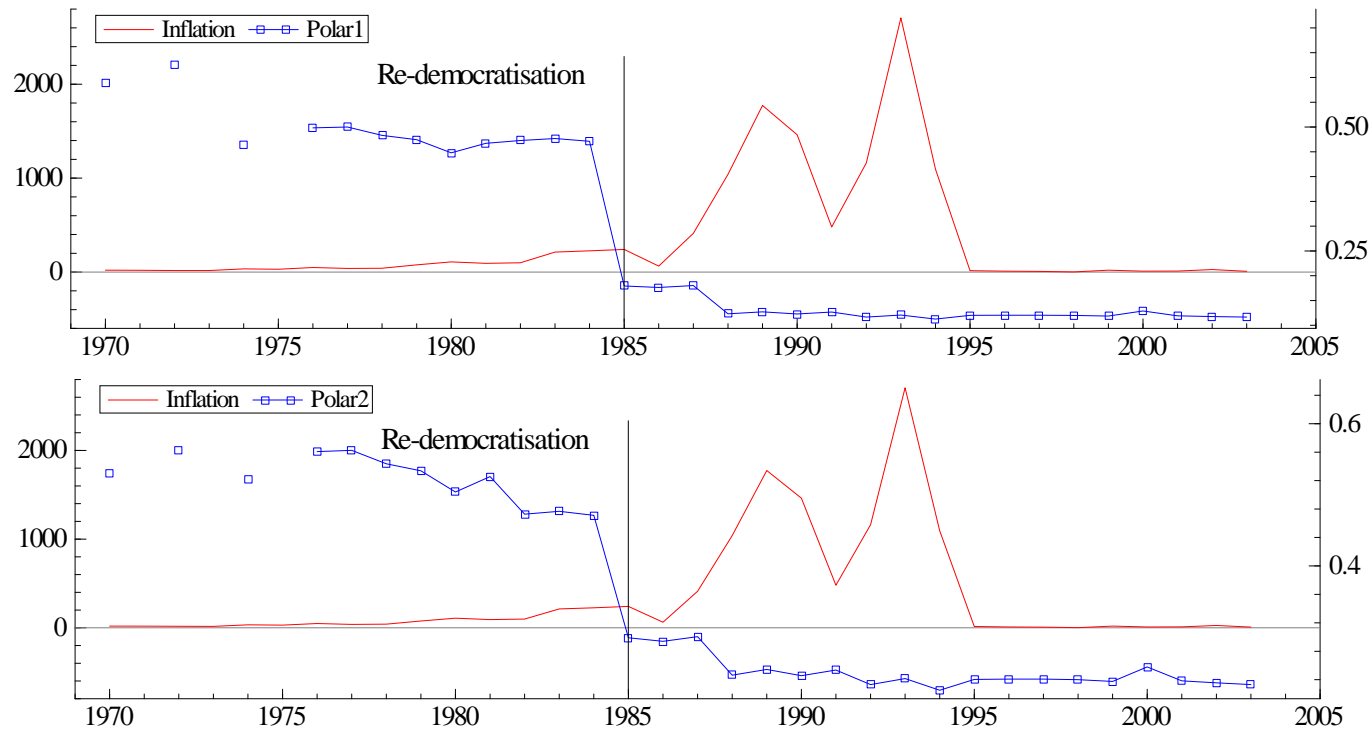
Figure 2: Inflation and Polarisation, Brazil 1970-2003. Source: FGV, IPEA, UNU-WIDER, Polity IV and author's calculations. $INFLATION$ is the inflation rates, $POLAR1$ is the interaction between the Gini coefficient and $DEMOC$, and $POLAR2$ is the interaction between the Gini coefficient and $XCONST$.

1.1 Related Literature

- Paldam [Public Choice, 1987] presents some early evidence from Latin America, which suggests that civilian governments tend to generate higher inflation than military ones.

- Sachs [NBER, 1989], and Dornbusch and Edwards [JDE, 1990] highlight the issue of recently-elected governments pursuing populist policies in Latin America, in the name of *[re]*distribution, and how regressive this man-made poor macroeconomic performance is.

- Alesina and Drazen [AER, 1991] suggest that in more, politically and economically, polarised societies stabilisations are delayed, i.e. stabilisations come only

after some *'political consolidation'* takes place, or after an agreement on which group pays for the stabilisation is reached. Cukierman et al. [AER, 1992] suggest that more politically unstable societies rely more on seigniorage, i.e. it takes time, or some sort of *'political consolidation'*, to achieve a better tax system or central-bank independence.

- Beetsma and Van der Ploeg [Public Choice, 1996] argue that in excessively unequal societies, Latin America fits the bill well, the government tries to please the medium voter, the poor in this case, via *[re]*distribution. Veiga [Economics and Politics, 2000] provides some evidence that in more fragmented and polarised societies, or in societies with a large number of political parties in congress, stabilisations are delayed.

- Acemoglu, Johnson, Robinson and Thaicharoen [JME, 2003] suggest that distortionary macroeconomic policies, e.g. in the role of high inflation, are symptoms of *'weak institutions'*. Desai, et al. [American Political Science Review, 2003] suggest that it all depends on how unequal a country is, i.e. democratisation taking place in unequal countries leads to populist policies, and hence high inflation.

- Aisen and Veiga [Journal of Money, Credit, and Banking, 2006] suggest that political instability, exemplified by the number of government crisis, leads to higher inflation, particularly in developing countries,

- Furthermore, Acemoglu, Johnson and Querubín [NBER, 2008] suggest that policy reforms are only successful when the *'political context'* is right, e.g. Zimbabwe

implemented central bank independence in 1995, however ... Dutt and Mitra [EJ, 2008] suggest that excessive inequality leads to political instability, which in turn leads to *policy volatility*, and lower investment and growth.

- On the other hand, Crowe [IMF, 2006] suggests that when the *'elite bias'* is reduced, or when the implementation of democracy takes place, macroeconomic performance improves without much delay, alternatively speaking, high inequality combined with low democracy has a positive impact on inflation.

1.2   The road ahead:

1. We briefly discuss the data set used and present the correlation matrix to see if there is any statistical relationship amongst the variables. Furthermore, we

present some graphs to illustrate the behaviour of the data at the time.

2. We then present the econometric strategy and an *unbiased* selection of the main empirical results obtained.

3. Finally, we conclude and suggest some future avenues to be explored.

2 The Data

- The data set covers the period between 1970 and 2003, and three countries, Brazil, Argentina and Peru, i.e. $T = 34$ and $N = 3$.

- The data on inflation *(INFLAT)* come from the Bureaux of Census, Brazil, Argentina and Peru respectively, and

- the data on the government's share of the real gross domestic product *(GOV)* come from the Penn World Table (PWT) data set mark 6.2.

- To construct the measures of economic and political polarisation we use, firstly, the Gini coefficient available from the UNU-WIDER World Income Inequality Data Base version 2.0c,

- and secondly, the Polity IV variables democracy *(DEMOC)*, which ranges from 0, a less democratic polity, to 10, a more democratic one, constraints on the

executive *(XCONST)*, which ranges from 1, a less constrained executive, to 7, a more constrained one, and political competition ($POLCOMP$), which ranges from 1, a less competitive polity, to 10, a more competitive one, which are compiled and provided by the Centre for Global Policy.

- With the above information we can then interact the Gini with these normalised Polity IV variables, so that higher values indicate more polarisation, to construct the following variables,

$$
\begin{aligned}
POLAR1 &= GINI * DEMOC, \\
POLAR2 &= GINI * XCONST, \\
POLAR3 &= GINI * POLCOMP.
\end{aligned}
$$

- In addition, we extract the principal components (PCs) of the above measures, so that we end up with one aggregated measure of polarisation $[POLAR(PCs)]$, which captures the common factors amongst these three variables. All in all, we use $POLAR2$ and $POLAR(PCs)$ for the empirical analysis.

- The control variables used include the ratio of exports and imports over the real GDP *(OPEN)*, and the growth rate of the real GDP *(GROWTH)*, which are provided by the PWT 6.2 data set.

- Given the above, Table 1 presents the correlation matrix, and it can be seen that both measures of polarisation present negative statistical correlations with *INFLAT*. This suggests that when polarisation decreased, macroeconomic performance deteriorated. *GOV* presents the expected positive correlation with *INFLAT*.

- In addition, Figure 3 illustrates, using the case of Brazil, the fact that when democratic institutions were implemented in 1985, GOV and $INFLAT$ increased considerably.

Table 1: The Correlation Matrix, Brazil, Argentina and Peru 1970-2003.

	INFLAT	GOV	POLAR	POLAR(PCs)	OPEN	GROWTH
INFLAT	1					
GOV	.2591	1				
POLAR	-.0779	.2767	1			
POLAR(PCs)	-.0376	.1442	.9728	1		
OPEN	-.4901	-.3011	-.1267	-.1813	1	
GROWTH	-.3888	.1307	.1621	.1250	-.0172	1

Source: Bureaux of Census, UNU-WIDER, PWT 6.2, Polity IV and author's calculations.
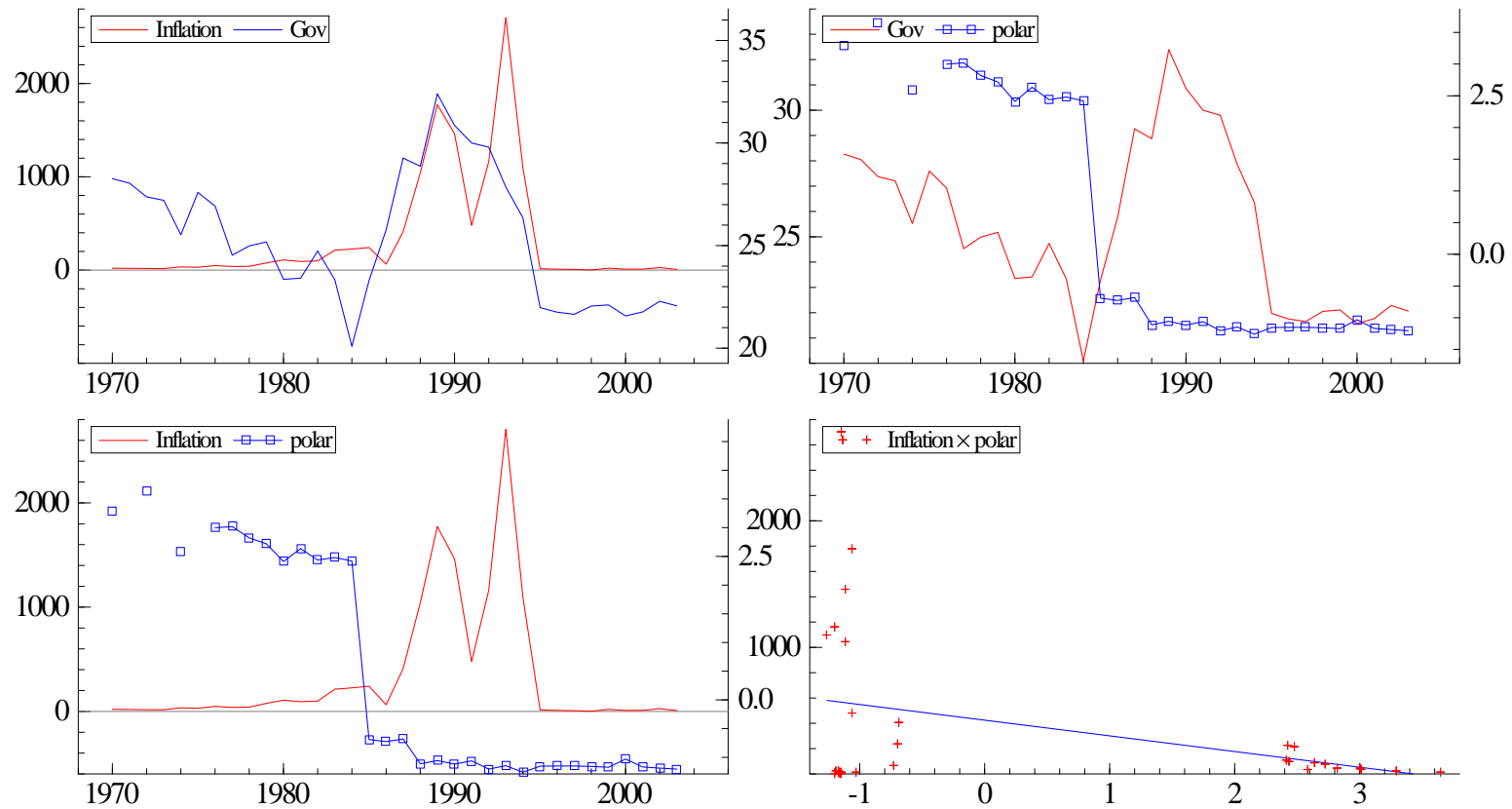
Figure 3: Inflation and Polarisation, Brazil 1970-2003. Source: Brazilian Bureau of Census, Penn World Tables, Polity IV and author's own calculations.

3 Empirical Strategy and Results

- Firstly, we test for unit roots in this $T > N$ panel using the Im, Pesaran and Shin [(IPS) JoE, 2003] test, which allows for *heterogeneous* parameters and serial correlation. The stats suggest that we can reject the null of a unit root in favour of the alternative that at least *one* country of each variable is, in fact, stationary.

- In addition, most of the variables used are stationary by default, i.e. the Gini and the Polity variables are within closed intervals, therefore the polarisation measures are bounded to be stationary. *GOV* and *OPEN* are ratios, again, somehow bounded to be stationary. *GROWTH*, given its erratic nature in those countries, revolving around the mean, is also stationary. Finally, *INFLAT*, according to the IPS test, is stationary.

- Furthermore, in $T > N$ dynamic panels the issue of *heterogeneity* bias might be important—caused for under wrongly assumed homogeneity of the slopes the composite disturbance term is serially correlated and the explanatory variables x_s are not independent of the lagged dependent variable y_{t-1}.

- For the above, the one-way Fixed Effects (FE) estimator provides consistent estimates in dynamic models when $T > N$, but only when the slopes are *homogeneous*. Moreover, Swamy's (1970) Random Coefficients (RC) estimator, which assumes heterogeneity of intercepts *and* slopes, gives consistent estimates of the expected values. In addition, the Mean Group (MG) estimator, proposed by Pesaran and Smith [JoE, 1995], also takes into account the presence of heterogeneity.

- Given the above, we then estimate static and dynamic models with different estimators, i.e. the benchmark Pooled OLS (POLS), Fixed Effects, Random Coefficients and Mean Group. The estimated heterogeneous dynamic equation looks like,

$$
\begin{aligned}
INFLAT_{it} \;=\;& \alpha_i + \beta_i GOV_{it} + \gamma_i POLAR_{it} + \delta_i OPEN_{it} + \\
& +\epsilon_i GROWTH_{it} + \varepsilon_i INFLAT_{it-1} + \upsilon_{it}.
\end{aligned}
$$

- Furthermore, some would justly argue that there is an economic endogeneity problem present here, i.e. *GOV* might be endogenous—or *GOV* and *POLAR* might be correlated. Therefore we make use of the Fixed Effects with Instrumental Variables (FE-IV) estimator to deal with this possible endogeneity.

- The static models, using POLS and FE, all suggest that $POLAR$ presents a negative and significant impact on *INFLAT*. *GOV*, as expected, presents positive

and significant effects on *INFLAT*. The F tests* suggest the presence of fixed effects, which validates the use of the FE estimator.

- The dynamic models confirm the above, suggesting that the measure of polarisation presents negative and significant effects on *INFLAT*. *GOV* confirms its positive and significant effects on $INFLAT$. The LR tests suggest that the coefficients are heterogenous, which justifies the use of the RC and MG estimators here.

- When we use $POLAR(PCs)$, the principal components of $POLAR1, POLAR2$ and $POLAR3$, as the identifying instrument for *GOV*, the estimates are mostly significant in the first-stage regressions, i.e. they are valid IVs. All in all, instrumented *GOV* is mostly significant and somehow confirms its positive impact on *INFLAT*.

Table 2: Static Estimates of POLAR on INFLAT, 1970-2003.

INFLAT	Static Models			
	POLS	FE	POLS	FE
GOV	.0842 (2.18)	.1734 (2.47)	.1496 (3.62)	.2016 (2.75)
POLAR			-2.9251 (-2.06)	-5.06 (-3.74)
OPEN	-.1091 (-5.31)	-.2266 (-7.75)	-.1385 (-6.26)	-.2644 (-7.96)
GROWTH	-.1594 (-5.15)	-.1376 (-5.15)	-.0933 (-2.44)	-.1052 (-3.26)
Constant	4.44 (4.57)	4.80 (2.88)	4.19 (4.03)	6.00 (3.06)
F test	22.62	41.48	19.92	28.42
F test*		18.11		14.85
R2	.41	.36	.53	.52

T-ratios in parentheses. Number of observations: $NT = 102$.

Table 3: Dynamic Estimates of POLAR on INFLAT, 1970-2003.

INFLAT	Dynamic Models		
	FE	RC	MG
GOV	.1377 (2.47)	.0928 (.49)	.0859 (4.24)
POLAR	-1.42 (-1.29)	-1.59 (-1.70)	-1.64 (-1.80)
OPEN	-.1247 (-4.13)	-.0769 (-2.13)	-.0800 (-2.43)
GROWTH	-.0895 (-3.62)	-.0465 (-.91)	-.0485 (-2.10)
$INFLAT_{(-1)}$	.5471 (7.62)	.5679 (4.42)	.5679 (6.91)
Constant	1.56 (1.01)	1.22 (.39)	1.41 (1.69)
F test	55.14		
F test*	5.01		
Wald test		145.12	145.12
LR test		31.17	31.17
R^2	.77		

T-ratios in parentheses. Number of observations: $NT = 102$.

Table 4: Estimates of POLAR(PCs) on GOV and INFLAT, 1970-2003.

GOV	FE-IV		
	(1)	(2)	(3)
POLAR(PCs)	-.3395 (-2.06)		-.2718 (-1.47)
POLAR(PCs)$_{(-1)}$		-.3859 (-2.25)	
INFLAT$_{(-1)}$			.2273 (1.45)
OPEN	-.1866 (-3.52)	-.1735 (-3.17)	-.1292 (-1.86)
GROWTH	.0101 (.19)	-.0044 (-.08)	.0269 (.49)
F test	4.26	3.67	4.16
R^2	.04	.03	.06
INFLAT	(1)	(2)	(3)
GOV	1.28 (2.11)		.4803 (1.25)
OPEN	-.0728 (-.70)	-.1365 (-1.78)	-.0808 (-1.91)
GROWTH	-.1214 (-1.83)	-.0982 (-1.61)	-.1006 (-3.06)
GOV$_{(-1)}$		.2744 (2.07)	
INFLAT$_{(-1)}$			.4748 (3.19)
Constant	-21.16 (-1.50)	.2744 (2.07)	-6.34 (-.81)
F test	180.77	232.64	968.05
F test*	3.98	4.23	2.52
R^2	.23	.26	.56

T-ratios in parentheses. Number of observations: $NT = 102.$

4 Concluding Remarks

- All in all, the populist view of state capture is confirmed by the data. Governments coming into power after re-democratisation in Latin America generated, in the name of *[re]*distribution, poor macroeconomic performance in the role of high inflation and even hyperinflation.

- Stabilisation is achieved, however after a, roughly speaking, 10-year lag. *'Political consolidation'* and a better institutional framework—fiscal and monetary policies, not to mention central-bank independence—seems to require a mature democracy, or the *'right political context'* to work well.

- Given that the previous literature does not provide a clear-cut answer on the subject, it is therefore important to conduct single-country studies or studies with

groups of countries that present similar characteristics so that a more *disaggregated* and insightful view emerges.

- The way forward; we are trying to increase the size of the panel, Bolivian data are fragmented, however Bolivia presented the worst hyperinflation of the period; Uruguay also presented poor macroeconomic performance after re-democratisation, although the *hyperinflation* in Uruguay was not at the same level than in the countries studied here. A panel of five would enrich the regional variation in the data, although my educated guess is that the results would persist.

- The use of the SUR estimator, which captures regional dependence, is another alternative in terms of estimation. Finally, an instrument interacting polarisation with central-bank independence is a possibility.

- Final thoughts: it seems that Zimbabwe's inflation became hyperinflation after the ruling party was faced with some political competition; is SA heading to a burst of populism, i.e. high*[er]* inflation, via the channel of more political competition? What about Venezuela? Is Chávez going to use the inflation tax to finance his populism once his oil revenues are gone? Three different cases …